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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/757,229

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Motoaki Saito

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6318

7590

05/19/2004

Jordan M Becker
Blakely Sokoloff Taylor & Zafman LLP
12400 Wilshire Boulevard 7th Floor
Los Angeles, CA 90025

EXAMINER

TABATABAI, ABOLFAZL

ART UNIT

PAPER NUMBER

2625

DATE MAILED: 05/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/757,229

Applicant(s)

SAITO ET AL.

Examiner

Abolfazl Tabatabai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-50 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 17-50 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7</u> . | 6) <input type="checkbox"/> Other: ____ |

FINAL ACTION

Response to Amendments/Arguments

1. Applicant's arguments, see (pages 9-11), filed February 23, 2004, with respect to the rejection(s) of claims 1-16 under Carrott et al (U S 6,396,940 B1) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

However, upon further consideration, a new ground(s) of rejection is made in view of over Hiki et al (U S 5,186,176) and Carrott et al (U S 6,396,940 B1).

2. Applicant argues in essence that the prior art does not teach or suggest enabling a user to selectively alter a display format of one of the display areas while the images are being displayed, to change a relationship between the images. Examiner disagrees and indicates that Carrott teaches enabling a user to selectively alter a display format of one of the display areas while the images are being displayed, to change a relationship between the images (column 8, lines 61-67 and column 9, lines 1-5).

3. Applicant argues in essence that the prior art does not teach or suggest simultaneously displaying a plurality of cross-sectional images of subjects, each in a separate display area on a display device. Examiner disagrees and indicates that Hiki teaches Simultaneously displaying a plurality of cross-sectional images of a subjects, each in a separate display area on a display device (column 8, lines 25-29).

4. Applicant argues in essence that the prior art does not teach or suggest plurality of images is real-time images of the subject. Examiner disagrees and indicates that Hiki teaches plurality of images is real-time images of the subject (column 10, lines 49-55).

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5. Applicant argues in essence that the prior art does not teach or suggest each of the different images represents a different cross-sectional slice of the subject. Examiner disagrees and indicates that Hiki teaches each of the different images represents a different cross-sectional slice of the subject (column 9, lines 35-39; 49-52 and column 10, lines 49-55).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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8. Claims 17-25, 28-33, 36-40 and 43-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiki et al (U S 5,186,176) in view of Carrott et al (U S 6,396,940 B1).

Regarding claim 17, Hiki discloses ultrasonic diagnosis apparatus comprising:
simultaneously displaying a plurality of cross-sectional images of subjects, each in a separate display area on a display device (column 8, lines 25-29).

However, Hiki is silent about specific details regarding the step of:

enabling a user to selectively alter a display format of one of the display areas while the images are being displayed, to change a relationship between the images.

In the same field (ultrasonic diagnosis) of endeavor, however, Carrott discloses a system for medical diagnostic ultrasound comprising the step of:

enabling a user to selectively alter a display format of one of the display areas while the images are being displayed, to change a relationship between the images (column 8, lines 61-67 and column 9, lines 1-5).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of enabling a user to selectively alter a display format of one of the display areas while the images are being displayed, to change a relationship between the images as taught by Carrott in the system of Hiki because Carrott provides Hiki a sophisticated ultrasonic imaging systems which are capable of assembling information from multiple 2D-dimensional cross-sections to form a three-dimensional representation of subject tissue. Such systems are potentially useful in the

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diagnosis of suspicious lesions in the breast and this ultrasonic imaging is advantageous in that the patient is not exposed to radiation.

Regarding claim 18, Hiki discloses ultrasonic diagnosis apparatus wherein the plurality of images is real time images of the subject (column 10, lines 49-55).

Regarding claim 19, Hiki discloses ultrasonic diagnosis apparatus wherein each of the images represent a different cross-section of the subject (column 9, lines 35-39 and 49-52).

Regarding claim 20, Hiki discloses ultrasonic diagnosis apparatus wherein the plurality of images are real time images of the subject (column 10, lines 49-55), and each of the images represent a different cross-section of the subject (column 9, lines 35-39 and 49-52).

Claim 21, is similarly analyzed as claim 17 above.

Regarding claim 22, Hiki is silent about specific details wherein enabling a user to selectively alter a display format of one of the display areas comprises:

enabling the user to alter a spatial orientation of said one of the display areas. In the same field (ultrasonic diagnosis) of endeavor, however, Carrott discloses a system for medical diagnostic ultrasound comprising the step of:

enabling the user to alter a spatial orientation of said one of the display areas (Column 2, lines 61-65).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a spatial orientation as taught by Carrott in the system of Hiki because Carrott provides Hiki a sophisticated ultrasonic imaging systems which are

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capable of assembling information from multiple 2D-dimensional cross-sections to form a three-dimensional representation of subject tissue. Such systems are potentially useful in the diagnosis of suspicious lesions in the breast and this ultrasonic imaging is advantageous in that the patient is not exposed to radiation.

Regarding claim 23, Hiki is silent about specific details wherein enabling a user to selectively alter a display format of one of the display areas comprises:

enabling the user to alter a representation of depth associated with the image in said one of the display areas.

In the same field (ultrasonic diagnosis) of endeavor, however, Carrott discloses a system for medical diagnostic ultrasound comprising the step of:

enabling the user to alter a representation of depth associated with the image in said one of the display areas (column 9, lines 39-44 and 58-65).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use depth associated with the image enabling the user to alter a representation of depth associated with the image in said one of the display areas. as taught by Carrott in the system of Hiki because Carrott provides Hiki a sophisticated ultrasonic imaging systems which are capable of assembling information from multiple 2D-dimensional cross-sections to form a three-dimensional representation of subject tissue. Such systems are potentially useful in the diagnosis of suspicious lesions in the breast and this ultrasonic imaging is advantageous in that the patient is not exposed to radiation.

Regarding claim 24, Hiki is silent about specific details wherein enabling a user to selectively alter a display format of one of the display areas comprises:

enabling the user to alter the display format of said one of the display areas without deforming the image in said one of the display areas.

In the same field (ultrasonic diagnosis) of endeavor, however, Carrott discloses a system for medical diagnostic ultrasound comprising the step of:

enabling the user to alter the display format of said one of the display areas without deforming the image in said one of the display areas (column 8, lines 61-67).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the display format of the display area without deforming as taught by Carrott in the system of Hiki because Carrott provides Hiki a sophisticated ultrasonic imaging systems which are capable of assembling information from multiple 2D-dimensional cross-sections to form a three-dimensional representation of subject tissue. Such systems are potentially useful in the diagnosis of suspicious lesions in the breast and this ultrasonic imaging is advantageous in that the patient is not exposed to radiation.

Regarding claim 25, Hiki is silent about specific details further comprising overlapping the display areas on the display device in response to user input.

In the same field (ultrasonic diagnosis) of endeavor, however, Carrott discloses a system for medical diagnostic ultrasound comprising the step of:

overlapping the display areas on the display device in response to user input.
(column 2, lines 59-65).

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It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use overlapping the display area as taught by Carrott in the system of Hiki because Carrott provides Hiki a sophisticated ultrasonic imaging systems which are capable of assembling information from multiple 2D-dimensional cross-sections to form a three-dimensional representation of subject tissue. Such systems are potentially useful in the diagnosis of suspicious lesions in the breast and this ultrasonic imaging is advantageous in that the patient is not exposed to radiation

Regarding claim 28, Hiki discloses ultrasonic diagnosis apparatus comprising: simultaneously displaying a plurality of real-time images of a subject adjacently on a display device, each image being displayed in a separate display area on the display device, each image representing a different cross-sectional slice of the subject (column 10, lines 43-68 and column 11, lines 1-3).

However, Hiki is silent about specific details regarding the step of:

in response to user input, altering a display format of one of the display areas while the images are being displayed, to change a spatial relationship between the images.

In the same field (ultrasonic diagnosis) of endeavor, however, Carrott discloses a system for medical diagnostic ultrasound comprising the step of:

in response to user input, altering a display format of one of the display areas while the images are being displayed, to change a spatial relationship between the images. (column 8, lines 61-67 and column 9, lines 1-5).

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It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of in response to user input, altering a display format of one of the display areas while the images are being displayed, to change a spatial relationship between the images as taught by Carrott in the system of Hiki because Carrott provides Hiki a sophisticated ultrasonic imaging systems which are capable of assembling information from multiple 2D-dimensional cross-sections to form a three-dimensional representation of subject tissue. Such systems are potentially useful in the diagnosis of suspicious lesions in the breast and this ultrasonic imaging is advantageous in that the patient is not exposed to radiation.

Claim 29, is similarly analyzed as claim 23 above.

Claim 30, is similarly analyzed as claim 24 above.

Claim 31, is similarly analyzed as claim 17 above.

Claim 32, is similarly analyzed as claim 22 above.

Claim 33, is similarly analyzed as claim 25 above.

Regarding claim 36, Hiki discloses ultrasonic diagnosis apparatus comprising:

a processor (fig.10 element 5);

a display device (fig.10 element 4B); and,

a memory storing instructions which, when executed by the processor (column 8, lines 11-29), cause the processing system to perform a process that includes:

simultaneously displaying a plurality of real-time images of a subject adjacently on the display device, each image being displayed in a separate display area on the

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display device, each image representing a different cross-sectional slice of the subject (column 8, lines 11-29).

However, Hiki is silent about specific details regarding the step of:

enabling a user to selectively alter a display format of one of the display areas while the images are being displayed, to change a relationship between the images.

In the same field (ultrasonic diagnosis) of endeavor, however, Carrott discloses a system for medical diagnostic ultrasound comprising the step of:

enabling a user to selectively alter a display format of one of the display areas while the images are being displayed, to change a relationship between the images (column 8, lines 61-67 and column 9, lines 1-5).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of enabling a user to selectively alter a display format of one of the display areas while the images are being displayed, to change a relationship between the images as taught by Carrott in the system of Hiki because Carrott provides Hiki a sophisticated ultrasonic imaging systems which are capable of assembling information from multiple 2D-dimensional cross-sections to form a three-dimensional representation of subject tissue. Such systems are potentially useful in the diagnosis of suspicious lesions in the breast and this ultrasonic imaging is advantageous in that the patient is not exposed to radiation.

Claim 37, is similarly analyzed as claim 22 above.

Claim 38, is similarly analyzed as claim 23 above.

Claim 39, is similarly analyzed as claim 24 above.

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Claim 40, is similarly analyzed as claim 25 above.

Claim 43, is similarly analyzed as claim 28 above.

Claim 44, is similarly analyzed as claim 29 above.

Claim 45, is similarly analyzed as claim 30 above.

Claim 46, is similarly analyzed as claim 31 above.

Claim 47, is similarly analyzed as claim 32 above.

Claim 48, is similarly analyzed as claim 33 above.

9. Claims 26, 27, 34, 35, 41, 42, 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiki et al (U S 5,186,176) and Carrott et al (U S 6,396,940 B1) as applied to claims 17, 28, 36 and 43 above, and further in view of Hossack et al (U S 6,511,426 B1).

Regarding claim 26, Hiki and Carrott are silent about specific details regarding separately assigning each of the display areas an opacity value in response to user input.

In the same field (medical diagnostic ultrasound) of endeavor, however, Hassack discloses a system for medical diagnostic ultrasound comprising the step of:

separately assigning each of the display areas an opacity value in response to user input (column 23, lines 59-67).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of assigning a different opacity to each display area as taught by Hassack in the system of Carrott because Hassack provides a system for reducing speckle for three-dimensional images and also the ultrasound system used to

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generate a first image, a remote ultrasound system or a remote workstation may be used to regenerate the same image.

Regarding claim 27, Carrott is silent about specific details regarding image display apparatus further comprising:

separately assigning each of the display areas an opacity value; and,
arranging each of the display areas on a three-dimensional image reconstructed with previously acquired data.

In the same field (medical diagnostic ultrasound) of endeavor, however, Hassack discloses a system for medical diagnostic ultrasound comprising the step of:

separately assigning each of the display areas an opacity value (column 23, lines 59-67); and,

arranging each of the display areas on a three-dimensional image reconstructed with previously acquired data (column 23, lines 59-67 and column 24, lines 1-6).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the step of a different opacity on a three-dimensional image reconstructed as taught by Hassack in the system of Hiki because Hassack provides Hiki a system for reducing speckle for three-dimensional images and also the ultrasound system used to generate a first image, a remote ultrasound system or a remote workstation may be used to regenerate the same image.

Claim 34, is similarly analyzed as claim 26 above.

Claim 35, is similarly analyzed as claim 27 above.

Claim 41, is similarly analyzed as claim 26 above.

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Claim 42, is similarly analyzed as claim 27 above.

Claim 49, is similarly analyzed as claim 34 above.

Claim 50, is similarly analyzed as claim 35 above.

Other prior art cited

10. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

U. S. Patent (5,954,650) to Saito et al is cited for medical image processing apparatus.

U.S. Patent (5,817,022) to Vesely is cited for system for displaying a 2-D ultrasound image within a 3-D viewing environment.

U S. Patent (5,647,018) to Benjamin is cited for method and apparatus for generating images.

U S. Patent (4,489,729) to Sorenson et al is cited for ultrasound imaging system.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

12. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (703) 306-5917.

The Examiner can normally be reached on Monday through Friday from 9:30 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Mehta Bhavesh M, can be reached at (703) 308-5246. The fax phone number for organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Abolfazl Tabatabai

Patent Examiner

Group Art Unit 2625

May 12, 2004



BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600